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PAPER

ON THE

Sickness and Mortality

IN

ARTIZANS' DWELLINGS

WITH ESPECIAL REFERENCE TO BACK-TO-BACK HOUSES

IN BRADFORD,

Read at the Meeting of the Epidemiological Society,

April 17th, 1896, by

Chairman

W. ARNOLD EVANS, M.D., LOND., 1862-1916

MEDICAL OFFICER OF HEALTH

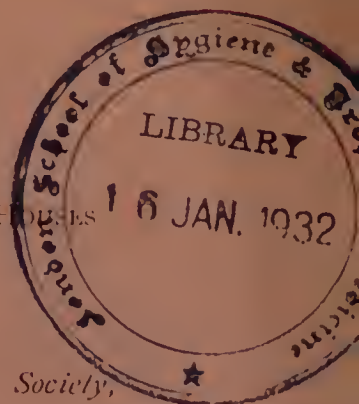
FOR THE

COUNTY BOROUGH OF BRADFORD.

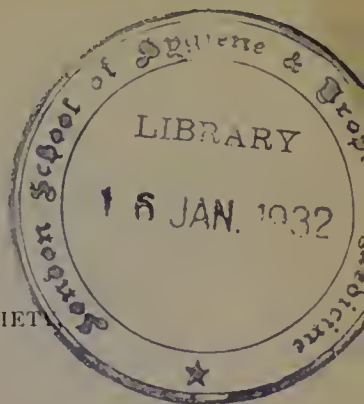
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PAPER

READ BEFORE THE EPIDEMIOLOGICAL SOCIETY

APRIL 17th, 1896.

MR. PRESIDENT AND GENTLEMEN,

In treating of the influence of the different kinds of dwellings, for the labouring classes, upon the health of those who live in them, I shall not refer to the block buildings that have been erected for the housing of the poor in the central and crowded parts of some of the large towns. Of these I have no experience, and they have not been erected in that part of the country, viz.: the West Riding of Yorkshire, to which my remarks more particularly apply. The houses of which I shall speak are those built for the average artizan, and intended for the use of one family only, usually described as "self-contained."

In Bradford, the houses inhabited by the working classes consist of two principal types, commonly known as 1—Through and through, and 2—Back to back.

The manner of construction will at once be appreciated by a glance at ground plans of three of the houses:

No. 1 represents the ground floor of a "through" house.

This plan shows one house of a row. You will see that it has vacant space on two sides, the back and the front; that it also possesses a back and a front door, in which in two particulars it differs essentially from a house built on the back-to-back plan. This type of house is the one which is now most in favour amongst persons of small means: in addition to two living rooms on the ground level it contains two bedrooms on the second floor, and above them an attic lighted by means of a skylight.

The sanitary appurtenances consist of a water-closet and a place for dry ashes, situated in the yard at the back of the house, the ashes place being emptied by means of a door in the back street. But in many of the older houses the midden-privy, I regret to say, takes the place of the w.c. and dry ash place.

No. 2 and 3 are the ground plans of two kinds of houses erected on the back-to-back principle.

The older style of building is represented in plan 2. The house consists of one living room on the ground floor, to which is attached a small scullery, situate sometimes on one side sometimes on another. Above are generally two bedrooms. These houses are built in rows of about 30 to 40 houses, the party walls between consist of a 9 in. brick wall. It is further seen that each house faces a main street and has all the vacant land attached to it on one side, two material points in which it differs from the third group. The out offices, consisting either of a midden-privy or water-closet and dry ash place, are fixed in that part of the land attached which is most remote from the house and next the street.

The 3rd type of back-to-back house is shown on plan No. 3. They are euphemistically described by builders as "blocks of four," but would be more correctly designated as houses built in continuous rows with passages between every four, the passages only extending to the height of the first storey, and being made with the double object of permitting access from the street to the house and appurtenances in the rear, and of promoting the circulation of air.

Examination of the ground plan shows that one house faces directly on to the street, is bounded on one side by the wall separating it from the next house, and on the other side by the passage; this house is, therefore, a considerable distance from the privy, which can only be reached by passing into the street and proceeding down the passage. The scullery containing the slop sink is placed on the side of the house next

the passage, and is lighted by a small window facing either the street or the side passage. The piece of land attached to the houses exists in the form of the passage already mentioned, and a yard into which the door of the house in the rear opens. In the yard are situated the sanitary conveniences for the whole of the houses, consisting usually of four privies and two ash pits for each so-called "block of four." The houses are only built to the height of two storeys, and some have two and some three bedrooms. The result of this style of building is that the house facing the street is a considerable distance from the out-offices, of which the persons living in the houses situate in the rear have an excellent but unenviable view, and as in the majority of instances there are no back streets, there exists a double row of privies (generally midden privies) between two rows of rear houses.

The sanitary evils necessarily connected with back-to-back houses will therefore be obvious. Owing to the absence of a door at each side of the house, a through current of air is an impossibility, a serious fault which I cannot persuade myself is in any way mitigated by the presence of a window in the passage, which in point of fact is very seldom opened, and when it is, becomes the means of ventilating the scullery and slop sink into the living room. There must, in houses built on this plan, be a part of the room next the party walls exceedingly difficult to ventilate, and that ventilation, at all events, in any appreciable degree does not occur through the party walls themselves is, I think, shown by the fact that when one house is fumigated with chlorine gas or sulphurous acid, the characteristic smell of these gases has seldom been noticed in adjoining houses.

How it ever came about that house-building was commenced on such a perverted plan is difficult to understand, and still more difficult to explain how, after the evils of back-to-back house construction had made themselves manifest, the system should have so long been in vogue.

The only explanation that suggests itself to me is, that some ingenious architect or builder found that by such an arrangement he could erect five or six houses on the back-to-back plan on the amount of ground requisite for only four through and through houses, and thus economise space. But, owing to improved building bye-laws in some of the West Riding towns requiring more land to be attached to back-to-back houses, this reason no longer exists, which fact, coupled with the growing demand on the part of the working classes for small through houses, has led to a more or less general abandonment of this method of construction.

Referring to the relative proportion of back-to-back and through houses, Dr. Barry and Mr. Gordon Smith in their well-known report say, when writing of Bradford, that "we find that in the 11 years, 1876-86, out of a total of 7,036 new houses certified as fit for habitation (by the medical officer of health), 4,486, or 64 per cent., were built on the back-to-back plan, or in other words, during the 11 years, 1876-86, new dwellings unfurnished with means for through ventilation were provided in Bradford for over 20,000 persons.

When, in addition to the facts already stated, we remember that in nearly all the large manufacturing towns of Yorkshire back-to-back dwellings have been and still are being built to a very considerable extent, the vital bearing of this inquiry upon the health and well-being of so considerable and important a section of the population will be manifest.."

Dr. Barry and Mr. Gordon Smith further state that "it is a significant fact that, during the recent survey made by the Inspectors of the Medical Department, it was found that in the manufacturing districts of Lancashire, in the 'Potteries' and in the 'Black Country,' where dwellings of the back-to-back class had formerly prevailed to a very considerable extent, the system of building houses unprovided with means for through ventilation had been almost entirely discontinued."

Although in Bradford the further erection of back-to-back dwellings is practically prohibited, and the requirements of the Building Committee such as will only allow of the construction of through houses, the direct cause of this improved state of affairs is so curious, that it is worth while to pay some little attention to the history of the housing of the working classes in this town. I will quote at some length from a report made for the Local Government Board about the year 1880, by Messrs. Netten Radcliffe and Gordon Smith. They state that "In 1862, the Corporation of this Borough, in view of the sanitary evils attaching to back-to-back houses, passed a bye-law which would have the effect of putting a stop to the building of this class of dwellings in the Borough. This bye-law was maintained in operation for seven years, when the policy which had given rise to it was reversed, the bye-law rescinded, and the erection of back-to-back houses again permitted. The circumstances which brought about the retrograde action of the Corporation on this important question appear to have been somewhat complex, and the opinions entertained on the subject by those who are placed in a position to judge best in regard to it, are not uniform. While some are disposed to attribute the greatest importance to local prejudice in favour of back-to-back houses influencing municipal action, others hold that the issue had in reality been governed solely by the questions of cost and rental with reference to the wants of the wage-earning classes, and that other questions had been altogether subsidiary to this one.

It is necessary here to anticipate a mis-apprehension which might else arise, if the rescinding of the bye-law of 1862 were to be regarded simply as a return to the state of things with regard to the building of back-to-back houses which had existed before the bye-law of 1862 came into operation. Such was far from being the case. The Corporation, while yielding to what it deemed a necessity in reverting to back-to-back construction, resolved to submit new back-to-back houses to certain regulations conceived with a view of diminishing to the

utmost the sanitary evils attaching to them. These regulations provide for a larger amount of space about back-to-back as compared with through and through houses, and by perforation of rows of these houses by broad passages in the ground storey to facilitate the movement of air about them, and to permit of the out-offices being placed in a position less liable to render them an offence and to become mischievous to health. In other words, the regulations by securing a larger space and freer circulation of air, and to some extent a less harmful disposal of filth in the vicinity of the houses, seeks to obviate the extrinsic evils which have usually co-operated with the intrinsic evil of defective ventilation in producing the unwholesomeness of back-to-back houses. The adoption of this policy, in conjunction with the growing wishes of the wage-earning classes to have more commodious (even if back-to-back) houses, has exercised a remarkable effect upon the construction and arrangement of the newer back-to-back houses in Bradford. Indeed, so great is the change, that it became necessary for us to study the back-to-back houses built since 1870 from a different sanitary point of view than that which is commonly entertained regarding houses of this class, and with which we had entered upon the inquiry. The building regulations at present in force require an open space 6 ft. 6 in. wide, and of a height not less than that of one storey, to be kept between every four houses arranged in pairs, two in front and two in the rear. Under this arrangement, in the plan most approved by the Corporation, rows of back-to-back houses of infinite length may be constructed, with a passage of the width and height described above between every two pairs, and it is alleged that this plan, considered with reference to the amount of space required to be left about each two pairs of houses, admits of the free circulation of air around the houses. Further, by means of the additional window or door opening into the passage at the side of each house, it is believed that facility is given for a free passage of air through the living rooms of the house. This class of back-to-back house has been largely adopted in the newer parts of Bradford.

Back-to-back houses of the kind here described were made the subject of close study by us in respect to their sanitary practicabilities, so far as this could be followed out without the aid of statistical evidence of sickness and mortality touching the occupants. As the result of this study, we have to admit that the sanitary condition of the back-to-back houses built according to the regulations above described differs very considerably from what we were prepared to find.

As to the exterior ventilation of the houses, a change has been wrought of the most important description. On account of the large space around them, and the perforation of the rows at short intervals by the passages, the abolition of closed courts, and further, it must be added, the introduction of more cross streets (the length of the rows being in this way controlled after a fashion), opportunities for much freer movement of air have been afforded about the buildings, and inferentially, within them. So long as the ordinary midden-privy is retained (in whatever manner it may be improved in structure and regulated), such purity of air in the vicinity of buildings as is desirable and capable of being obtained will not be got. But the greater freedom in the movement of air about the buildings which is now being secured, together with a better arrangement of the privies, has very manifestly diminished privy nuisance. It appeared to us quite obvious that, when Bradford shall have adopted a privy system worthy of so important a corporation, the conditions for keeping wholesome the atmosphere about the newer back-to-back dwellings will probably have been carried to almost so great an extent as can be expected in a large manufacturing town. Obviously, the question of the internal ventilation of back-to-back houses in its sanitary aspects has very close relations with the quality of the air supplied to them from without.

Assuming it to be true that back-to-back house construction is to a certain extent a necessity in Bradford, we must state that we are not prepared to say that their erection there is strictly limited within the bounds of the economic

considerations which we are informed render that construction necessary. There is, no doubt, a strong local prejudice among the operatives and other classes in favour of these houses, and we observed certain houses in course of erection which might almost be denominated back-to-back villas. These houses consisted of commodious four-roomed cottages, having the requirements of good through houses, built as back-to-back houses. It is not easy to understand how so curious a perversion in house building is permitted by the Corporation."

Messrs. Netten Radcliffe and Gordon Smith further say "that the Bradford plan is defective in so far as the breaks in the rows are incomplete, the covered passages intervening between each block of four houses being a very imperfect provision for cross ventilation, in their estimation, as compared with a complete ventilation. The extra bedroom gained in the Bradford plan is regarded as a set-off for the complete break. We cannot look upon it in this sense, especially in view of its being an inducement for families of larger size than desirable to occupy these houses. Moreover, the want of the complete break makes it necessary on the Bradford plan to group the privies in the face of the houses on one side of the row, an inconvenient and somewhat indecent practice, and one subjecting the adjacent houses unduly to the chances of privy nuisance."

Towards the close of their report, the Inspectors state that one of the most important elements in the regulation of back-to-back house arrangement relates to the provision made for excrement disposal in connexion with them, so as to maintain the purity of air around them. They point out that although this question is not peculiar to back-to-back houses, it has, for obvious reasons, for them a special importance, and recommend to the Local Government Board that where a local authority is permitted to have bye-laws for the regulation of back-to-back houses, the arrangement for excrement disposal should at the same time have serious consideration.

Such, then, was the state of affairs at the time when Messrs. Netten Radcliffe and Gordon Smith made their report. And as regards the building of back-to-back houses in "blocks of four," operations went on briskly up to June, 1894, when, in consequence of the offensive character of the emanations emitted from privies or defective water-closets in some districts, the whole question of back-to-back house construction was raised, and a decision arrived at by which houses after the style of Plan No. 2 could be built, the plan shewing that the land attached to each is situate wholly on one side, each house having its sanitary appurtenances in its own ground, and placed as far as possible from the building itself.

This re-consideration of the building bye-laws was partly influenced by the decision of Mr. Justice Wills and Mr. Justice Wright, sitting in the Queen's Bench Division on 4th of December, 1893. They dismissed an appeal in the case of *Travis v. Utley*, which dismissal decided that any drain carrying the sewage of any two or more houses was a 'sewer' within the meaning of the Public Health Act, and repairable by the local sanitary authority. This put upon the sanitary authority the responsibility of the maintenance of the drains from all back-to-back houses built in blocks of four, for in this method of house construction the waste water pipes from the kitchen or scullery unite in the passage before entering the street sewer. Obviously the only way for sanitary authorities to avoid incurring further responsibility in this matter was to insist upon each house having its own drain taken separately into the street sewer.

But in the meantime some enterprising builders had erected a considerable number of through houses very much after the style shown in plan No. 1, and were delighted to find that applications from intending tenants were received as soon as the houses were certified to be fit for habitation. This class of house had now become very popular and is chiefly inquired for by the best class of artisans.

It is now two years since the Corporation sanctioned any plans for houses on the back-to-back principle.

The causes therefore which have brought about the abolition of back-to-back house erection in Bradford and some neighbouring towns are chiefly these, viz.:

1. The inconvenience experienced in the matter of excrement removal and disposal, there being no back street in connection with "block of four" system.
2. The increasing demand on the part of the working classes for through houses in preference to back-to-back houses.
3. The decision of Justices Wills and Wright in reference to drainage, by which the drainage of blocks of four is rendered an extremely difficult matter.

At the time of the inquiry by Dr. Barry and Mr. Gordon Smith into the subject of back-to-back houses, very little knowledge as to the prevalence of sickness and disease in reference to them had been obtained, in fact, the only statistical evidence given upon this part of the inquiry in their report was supplied by Dr. Tatham, and had reference to some of the more ancient and insanitary areas in the Borough of Salford, Dr. Barry and Mr. Gordon Smith state that :

"As regards this section of the inquiry we experienced great difficulty in obtaining any reliable information. We found in all the districts visited that there was a general opinion on the part of the Medical Officers of Health that back-to-back houses as compared with through and through houses had an unfavourable influence on the health of the inhabitants, but we could not find that this opinion was supported by any ascertained facts ; indeed, no systematic study appeared to have been made to determine by actual observation the influence which houses with and without through ventilation respectively had upon health.

From our own observations we are convinced that as regards many of the Yorkshire towns little difficulty would be experienced by the Local Medical Officer of Health in ascertaining the relative incidence of pulmonary disease, phthisis, diarrhoea and infectious disease generally in houses of the two classes as in several of the towns there are more or less distinctly defined districts composed respectively of houses of these two classes."

Some three or four years after the publication of this report the back-to-back house question was keenly discussed by members of municipal bodies and others who took an interest in house property and the housing of the working classes in the West Riding, the result being that a protracted controversy was carried on by means of the daily newspaper in the district.

At length the question was taken up by Dr. Bell, of Bradford, who made some inquiry into the general mortality amongst the inmates of the two classes of houses.

Much to my astonishment Dr. Bell found that in this respect the through and through houses compared unfavourably with those built on the back-to-back plan. Mr. Herbert Jones, Medical Officer of Health for Crewe, afterwards made an investigation into the death-rates in back-to-back as compared with those in through houses in the districts of Shipley and Saltaire, and communicated his information to the Bradford Medico-Chirurgical Society on the 2nd May, 1893, : he showed that the death-rates from all causes, from phthisis, respiratory diseases, zymotic diseases, and diarrhoea were higher in the case of the back-to-back than the through houses. The districts selected by Mr. Jones for his inquiry were very favourable for such an investigation and I attach great importance to his results.

The statistical work on this point done by Dr. Tatham and Dr. Niven of Manchester, had reference to a large amount of house property which had become unhealthy by reason of its age and immediate surroundings, in addition to its containing

a large proportion of houses of the back-to-back variety. This I think is shown by the enormously high death-rates obtained in the districts investigated by these observers. Dr. Niven obtained death-rates from all causes, varying between 18 and 46 per 1000 of the population.

In selecting districts in Bradford for my inquiry I have had considerable difficulty in obtaining those which in all respects would be strictly comparable. They are therefore small, but the houses comprised within them are as alike in age, in sanitary circumstances, and in the class of artizans who occupy them, as it is possible to obtain.

The two groups of back-to-back houses contain respectively 1928 and 619 dwellings: the third group contains 751 through houses.

The population as ascertained from the returns of the district enumerators employed in the census of 1891, is shown to be 9116 for the first district, 2728 for the second, and 4002 for the third district. This gives an average of 4.7 and 4.4 persons per house for the two back-to-back groups, and 5.3 per house for the group of through houses. The average area per house including the streets is 125 square yards, and 98.6 square yards for the two groups of back-to-back houses, and 116.6 square yards for the through house group. The average number of square yards for each occupant is only 22.0 for those living in the through houses, but 26.5 and 24.2 for persons inhabiting the back-to-back houses. Similarly a greater density of population is shown for the through houses as compared with the back-to-backs, there being 2219 persons per acre to the former as compared with 181 and 215 for the latter.

In considering the mortality rates I have taken the number of deaths occurring in those districts for the years 1890-91-92, and have applied the population as ascertained at the 1891 census, a proceeding, although not perhaps absolutely correct, yet contains an error so small as to be inappreciable.

The mean death-rate for the through house district is seen to be 15.1 per 1000 of the population as compared with 17.7 and 18.3 per 1000 for the other two districts. The mean death rate from phthisis is 1.39 per 1000 for the through houses, whilst that for the back-to-backs is 2.41 and 1.68 respectively, which figures I think show that, although there is a greater density of population in the through houses, there is something which makes for a greater prevalence of phthisis in houses not provided with means for through ventilation. In reference to the diarrhœal diseases the figures are so small that I do not attach much importance to them. I had an idea, obtained by inquiries from medical practitioners in Bradford, that in back-to-back houses diarrhœal diseases were more common in the rear houses which overlooked the privies than in those which fronted the street, but on examining the health reports of my predecessors I found the following paragraph in the report of the late Mr. Harris Butterfield for the year 1878 :—

“ During an epidemic of summer diarrhœa which prevailed in Bradford in 1878, 101 houses in which deaths had occurred were visited. Of the 101, 90 were of the back-to-back description, 2 were cellar dwellings, and 9 through houses. Of the 90 back-to-back houses, 60 fronted the street, and 30 the backyards. Why the deaths should be twice as numerous in the front houses as in the back ones, which face the privies and ashpits common to both, is not easily accounted for, unless the more ready access to the conveniences induces a more frequent and prompt removal of the excreta than is the case in the front houses. I have frequently remarked that rather than pass through the portions of streets and passages necessary to reach the proper receptacle, women will conceal excreta in some obscure corner of the premises until nightfall. The effect of thus contaminating the already sufficiently close atmosphere of a back-to-back house is of course exceedingly prejudicial to a child suffering from the effects of bad nursing and improper diet. More especially is this the case when the obscure corner before mentioned is beneath the shelf on which the milk is kept.”

A similar investigation of my own, however, showed that out of about the same number of cases in the year 1893, 57 per cent. occurred in the rear houses in comparison with 43 per cent. in the houses fronting the street. Nevertheless, I am quite sure that offensive material is kept in the front houses as described by Mr. Butterfield, and is the direct cause of filth diseases that might easily be prevented.

For municipal purposes the County Borough of Bradford is divided into fifteen wards, nine of which contain over 60 per cent. of back-to-back houses, the remaining six containing between 40 and 60 per cent. of houses constructed on this principle. For the other years 1890, 1891 and 1892 the average death-rates per 1000 living from all causes, from phthisis and from diarrhœa in these two groups of wards were as follow :—

	All causes.	Phthisis.	Diarrhœa.
GROUP I. Containing 40-60% of back-to-back houses ... }	19.8	1.71	.36
GROUP II. Containing over 60% of back-to-back houses ... }	23.7	1.93	.83

Showing a much higher death-rate from all causes, from phthisis and from diarrhœa in the group containing the larger proportion of back-to-back houses.

Appended is a table giving a few important statistical particulars in reference to the houses in Bradford, during the three years 1890-92. :—

	Total number of houses.	Population.	Average number of persons to each house.	Average number of square yards to each house.	Average number of square yards to each person.	Number of houses per acre.	Number of persons per acre.	Weekly rental (including rates).	All causes.	Phthisis.	Diarrhoea.	Death rate per 1000.
Through Houses . .	751	4002	5.3	116.6	22.0	41.5	219.95	6/- 7/6	15.1	1.39	.39	
Back to Back in } continuous rows }	619	2728	4.4	98.6	24.2	49.0	215.6	4/6 5/9	17.7	2.41	.00	
Back to Back in } Blocks of four }	1928	9116	4.7	125.0	26.5	38.7	181.89	5/3 6/-	18.3	1.68	.25	

STATISTICS respecting different kinds of ARTIZANS' DWELLINGS IN BRADFORD.

Out of a total of nearly 45,000 Houses in Bradford, over 28,000 are constructed on the back-to-back principle.

The mean death-rate per 1,000 living in the Borough during the three years 1890, 1891 and 1892, from :—

All causes	was	21.12 per 1000
Phthisis	“	1.853
Diarrhoea	“	0.540

Statistics respecting the three principal types of Artisans' Dwellings are set forth in the table appended.

	Total number of houses.	Population.	Average number of persons to each house.	Average number of square yards to each house.	Average number of square yards to each person.	Number of houses per acre.	Number of persons per acre.	Weekly rental (including rates).	All causes.	Death rate per Phthisis.
Back to Back in Blocks of four }	1928	9116	4.7	125	26.5	38.7	181.89	5/3 6/-	18.3	1.68
Back to Back in continuous rows }	619	2728	4.4	98.6	24.2	49.0	215.6	4/6 5/9	17.7	2.41
Through Houses . .	751	4002	5.3	116.6	22.0	41.5	219.95	6/- 7/6	15.1	1.39



